GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN

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GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN

Report of the Eleventh Session
Athens, Greece, 6-11 March 1972

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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INTRODUCTION

1. The Eleventh Session of the General Fisheries Council for the Mediterranean (GFCM) took place from 6 to 11 March 1972, at the Eugenides Foundation, Athens, with the attendance of delegates from twelve out of the eighteen Member Nations (see Annex I, page 15) and Observers from one non-Member Nation and four international organizations. The list of participants is given in Annex II, page 17.

As the current Chairman and Vice-Chairmen were unable to attend, due to health or administrative reasons, the Secretary of the GFCM took the chair until the new Chairman, Mr. A.Z. Ben Mustapha was elected (see Chapter IX, page 14).

2. The Session was preceded, from 2 to 4 March, by a Symposium on Brackishwater Aquaculture the report of which is attached as Annex VI, page 35.

3. The participants were welcomed by Mr. Skiadopoulos, President of the Institute of Oceanographic and Fishery Research; Mr. P. Papapanayotou, Under-Secretary of State for Agriculture, Ministry of National Economy, and Mr. F.E. Popper, Assistant Director General (Fisheries) of FAO. Their addresses appear in Annex V, page 29.

4. The Agenda shown in Annex III, page 25, was adopted.

5. The Session was divided into seven plenary meetings and sessions of the following groups:

a) Working Party on Resources Appraisal and Exploitation;

b) Working Party on Fishery Statistics;

c) Working Party on Aquaculture and Fisheries in Brackish Waters

d) Working Party on Economic Problems of Fisheries Development;

e) Drafting Committee for Resolution XI/72/1 on pollution;

f) Editorial Board.

6. The Council took note of the report of the Executive Committee and the Secretariat. It approved the Executive Committee's proposal to organize, in conjunction with the Twelfth Session, a Symposium on Economic Problems of Fisheries Development in the Mediterranean.

I. ACTIVITIES OF THE WORKING PARTIES DURING THE INTERSESSIONAL PERIOD

7. At its first two plenary meetings the Council reviewed the intersessional activities of its working parties, approved its reports and gave guidance for their future orientation. Following are the specific points of this discussion.

A. WORKING PARTY ON DEMERSAL RESOURCES APPRAISAL AND EXPLOITATION

8. Mr. C. Bas (Spain), Convener, reported on the work achieved by the group during its two intersessional meetings (Rome, June and December 1971).

9. The Council noted that, given the mesh size currently in use, fishing effort on several of the stocks located in the western Mediterranean and particularly of those off the European coast was markedly in excess of that required for obtaining the maximum catch, and it therefore urged that more effective management measures should be introduced to initiate rebuilding of stocks and for restoring the profitability of the fishery. As most national fleets presently exploit separate fishing grounds, such measures should first be applied at the national level. However, in view of the inter-relationship between the stocks, the Council recommended that these measures should, where appropriate, be harmonized. The need for concerted action among countries was also stressed, in order to regulate fishing of those stocks which are exploited internationally.

10. The Council expressed the wish that a meeting of the Working Party, enlarged to include senior officers in fishery economics, statistics and administration from western Mediterranean countries be soon organized by FAO, with the objective of examining practical conservation measures, which would also take into account the economic and social conditions of each fishery.

11. The Council recognized that the application of mesh regulation is a difficult problem and that it would not seem to be appropriate to adopt further measures before those currently in use are fully enforced. The Council therefore recommended that in countries bordering the western Mediterranean, greater efforts should be made to enforce the prohibition - which is presently included in most of the national legislations - of trawls with a mesh size under 40 mm (stretched meshes, internal dimensions) as well as special devices preventing gear from operating with meshes wide open.

12. In order to improve the assessments achieved by the group and to be able to forecast the effects, both on stocks and catches, of possible regulatory measures, there is an urgent need for collecting on a routine basis more appropriate fishery statistics and intensifying biological sampling. Accordingly the Council endorsed the following recommendations presented by the group:

- for species of major commercial importance, statistics of catch and effort should be regularly collected and separately recorded by individual fishing zones and by fleets using different types of gear;

- length frequency distributions, and, as far as possible, age determination should be obtained in order to monitor the structure of main exploited fish populations.

13. Finally the Council recommended that the Working Party should extend its activities to cover the eastern Mediterranean including the Black Sea. It also urged that studies should be undertaken of the pelagic stocks of greatest commercial significance; accordingly, it was decided to amend the title of the group and to rename it "GFCM Working Party on Resources Appraisal and Exploitation".

B. WORKING PARTY ON FISHERY STATISTICS AND BIOLOGICAL SAMPLING

FISHERY STATISTICS

14. The Secretariat described the activities undertaken in this field during the intersessional period.

15. Following the discussion, the Council recommended that national statistical institutions should, in due course, make full use of the recommended standardized system when reporting their fishery statistics to the agency (at present FAO) responsible for their compilation and publication in a regional bulletin. The Council also agreed that, as a first step, efforts should be directed toward ensuring the efficient functioning of this system which is at present limited to the reporting of

i) national catches by group of species by sub-area of capture;

ii) national fishing fleets (size and structure).

16. Nevertheless, stock assessment workers should, in close collaboration with those responsible for statistics collection, ensure that catch and effort data appropriately classified by geographical sub-areas and fishing gears should be regularly collected for resources evaluation studies.

17. Mr. G. Bini, coordinator for the preparation of the FAO/GFCM Species Identification Sheets for statistical purposes presented these sheets. The Council agreed that the use of these sheets and fish names, listed therein, would improve the accuracy of statistical data by helping to avoid misidentification of species and the use of different scientific and vernacular names for the same species; it therefore strongly recommended that their use by national fishery and statistical officers be encouraged and that, in the future, only the names in the sheets should be used in national official statistics and for international correspondence.

BIOLOGICAL SAMPLING

18. Most of the activity in this field has been carried out within the framework of the Working Party on Demersal Resources Appraisal and Exploitation (cf. Chapter A page 5). The Council endorsed the recommendations of the Working Party, stressing the need for intensifying routine programmes on biological sampling as a basis for improving stock assessments undertaken and for monitoring the effects of fishing on the stocks. In the future, compilation of some of these data, for stock assessment, may be required for combined analyses on a regional basis and the FAO Fishery Data Centre could provide the required technical support for this purpose.

19. Noting that biological sampling and analysis of obtained data are essentially carried out by national fishery research institutions, the Council recommended that activities in this field be undertaken for the time being by the Working Party on Resources Appraisal and Exploitation. It therefore decided to rename the Working Party on Fishery Statistics and Biological Sampling as the "Working Party on Fishery Statistics". However, it stressed that, within both national and regional institutions, close contact should be established and maintained between stock assessment workers and those responsible for collection and compilation of statistics.

C. WORKING PARTY ON AQUACULTURE AND FISHERIES IN BRACKISH WATERS

20. Mr. R. Raimbault, Convener of the Working Party presented the report of its third session in Sète, France, 19 - 21 October 1971. The Session in Sète was largely devoted to reviewing the results of the FAO/GFCM Cooperative Programme of Research on Aquaculture (COPRAQ) and was also attended by a number of scientists participating in the Programme.

21. The Convener summarized the results reported at the session, particularly in the fields of controlled breeding of grey mullets (Mugil spp.), gilthead bream (Sparus auratus) and sea bass (Dicentrarchus labrax), intensive and new techniques of mollusc culture and the propagation of shrimps.

22. The Secretariat pointed out that the session in Sète recommended the continuation of COPRAQ as a dynamic programme, with appropriate additions and alterations as found necessary.

23. The main additions suggested at the session were studies on:

i) the effects of aquatic pollution on aquaculture;

ii) diseases of eels;

iii) breeding and cultivation of the oyster Crassostrea gigas, and

iv) the physiology of reproduction of selected species of finfish.

24. The action taken by FAO to implement the recommendation of the Tenth Session of the Council that a Training Centre on Brackishwater Aquaculture be organized in the Mediterranean region was reported. The Session emphasized again the need for holding such a training centre in a suitable country in the region. It was agreed that efforts should be continued to obtain financial support for holding it as soon as possible.

D. WORKING PARTY ON UTILIZATION AND MARKETING OF FISH AND FISHERY PRODUCTS

25. The report of the third session of the GFCM Working Party on Utilization and Marketing of Fish and Fishery Products (Rome, 15-17 November 1971) was introduced by Mlle F. Soudan, Convener of the Working Party and by the Secretariat.

26. The Council noted with appreciation that a programme of work as developed by a delegate regarding the use of refrigerated sea water would be presented at the fourth session of the Working Party. It was also pointed out that the results on thawing of frozen fish and its relation to alteration of quality should be based on larger scale experiments and on research and experience from different countries using a variety of methods of analysis.

27. The question was raised whether the Working Party should not be concerned with production and marketing of Fish Protein Concentrate (FPC) that in other countries, e.g. the U.S.A., appears to play a significant role in the discussion concerned with the utilization of fishery resources. The FPC problem did, however, not seem to be of a nature specific to the Mediterranean and therefore the participants did not consider to include it in the activities of the Working Party.

28. The Council was informed that the Working Party had considered a background paper prepared by the Secretariat on fish trade between GFCM member countries. In order to collect data for a more detailed study, the Working Party had suggested to draft an outline indicating the information required from potential contributors. As regards the item "New fish products and preparations" of the programme of work, the Working Party had decided that the scope of this work would be changed to a review of developments in fish utilization and demand characteristics in order to indicate potential new or better uses of Mediterranean species.

29. The Council decided that, in future work, more emphasis will be given to the economics of marketing and related development aspects in order to support the Symposium on Economic Problems of Fisheries Development in the Mediterranean.

II. FOLLOW-UP OF THE SYMPOSIUM ON BRACKISHWATER AQUACULTURE

30. The Council approved the report of the Symposium (See Annex VI, page 35). It requested its Working Party on Aquaculture and Fisheries in Brackish Waters to discuss, during its Fourth Session, appropriate measures for the implementation of the eight resolutions included in this report.

III. MARINE POLLUTION AND ITS EFFECTS ON LIVING RESOURCES AND FISHING

31. The Council reviewed its activities in the field of marine pollution and expressed its appreciation of the report "Survey of Marine Pollution in the Mediterranean", prepared as a follow-up of a recommendation of its Working Party on Marine Pollution in Relation to the Protection of Living Resources during the Tenth Session. The discussion that ensued indicated the magnitude of the problems involved and the need for greater efforts to solve them in the Mediterranean region. In particular the Council noted that aquatic pollution was identified as a major constraint to aquaculture development by the GFCM Symposium on Brackishwater Aquaculture that preceded the Session.

32. The Council has maintained close collaboration with the international and inter-governmental bodies concerned with pollution in the Mediterranean, particularly the International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM) and the Intergovernmental Oceanographic Commission (IOC). This collaboration should be strengthened so as to deal effectively with the fishery aspects of marine pollution, and the Council should actively participate in coordinated programmes of work, in the framework of the Cooperative Investigations of the Mediterranean, including base line studies and monitoring of pollutants.

33. The GFCM Working Party on Marine Pollution in Relation to the Protection of Living Resources, should continue to assist the Council in this field and should be enlarged to enable representative membership from scientific and geographical points of view. If funds are available, a meeting of the Working Party could be convened during the intersessional period. It was suggested that such a meeting be held in one of the member countries.

34. The Council took note of the statement made by a number of countries of the Mediterranean at the First Session of the Inter-Governmental Working Group on Marine Pollution (London, June 1971) which urged close international cooperation to fight against marine pollution in the Mediterranean.

35. The Council noted with satisfaction the cooperation that is developing between some of the countries in the region in controlling pollution and protecting the resources. The programmes of investigations recently initiated in some of the countries were also noted with interest. It was, however, clear that several of the countries will need technical assistance in this field of work. If marine pollution studies are incorporated in the fishery and aquaculture development projects sponsored by UNDP/FAO or bilateral aid agencies, it will facilitate the provision of such assistance. The Governments concerned and aid-giving agencies are urged to take this into account when formulating future project proposals and also consider the possibilities of including such studies in the on-going projects. The training of scientists and technicians deserves special consideration in all such projects.

36. The Council considered that pollution by heavy metals, pesticides and oil should receive particular attention in view of its effects on the quality of fishery products and their marketing. Detailed ecological studies should also form an integral part of all marine pollution investigations.

37. In the light of the above, the Council adopted the following resolution:

RESOLUTION XI/72/1

The Council

Being aware of the seriousness of pollution in the Mediterranean as it results from the report "Survey of Marine Pollution in the Mediterranean";

Noting that the dispersion of pollutants from this sea is hampered by its semi-enclosed nature;

Further noting that the increasing amount of pollutants discharged into the sea, in addition to being detrimental to the life of marine flora and fauna may also severely affect public health;

Taking into consideration the fact that the countries of the region are anxious to protect the living resources of the Mediterranean as is evident from the statement of a number of them at the First Session of the Inter-Governmental Working Group on Marine Pollution in London, June 1971;

1. Recommends that the GFCM Working Party on Marine Pollution in Relation to the Protection of Living Resources continue and intensify its activity with the following terms of reference:

(a) To assess, through the cooperation of the institutes and laboratories in member countries, the amount of heavy metals and pesticides in the tissues of marine species with highest accumulating capacity - especially those that attain larger sizes and have longer life - and study the possible synergic toxicity of these pollutants;

(b) To propose, if necessary, measures to avoid that fishery products which have become harmful to consumers enter the marketing channels;

(c) To promote biological, ecological and biochemical studies directed to identifying the sources of pollution of any nature, devoting special attention to untreated domestic or industrial wastes, in order to protect the living resources from this pollution;

(d) To assist the Council in maintaining and expanding its cooperation with international and intergovernmental bodies concerned, particularly ICSEM and IOC, through the programmes of research and monitoring of marine pollution of the Cooperative Investigations of the Mediterranean;

(e) To collect, store and disseminate data relating to pollution in the Mediterranean and its effects on living resources.

2. Recognizes with appreciation the efforts made by the Intergovernmental Maritime Consultative Organization (IMCO) in cooperation with other international agencies to reduce oil pollution in the seas and, taking into account the conventions drawn up in this regard,

Urges its Member Governments to ratify these conventions and to strongly request IMCO to take all possible further measures for controlling more effectively pollution caused by shipping and handling at sea of oil and other pollutants;

3. Requests the Director-General of FAO to consult with Member Governments of GFCM with a view to convening a meeting of these governments for discussions aimed at preparing a Convention to control the discharge into the sea of pollutants that would affect its living resources, bearing in mind the economic effects of such control.

IV. PROBLEMS OF FISHERIES DEVELOPMENT

38. In introducing the item the Secretariat stated that it was essentially a conclusion to discussion on Item 4 of the Agenda on the activities of the working parties. The identification of the problems of fisheries development in the area led naturally to the subject of the working parties and it was intended that the discussion would assist the future work of these groups. The Secretariat emphasized that the term "development" was not to be interpreted simply in the sense of increasing the volume of production but should be taken to include such concepts as the more efficient exploitation and utilization of the resources as well as improvements in the social and economic status of fishermen.

39. This latter aspect is important in the context of management since, although in some cases benefits could be expected from increased catches resulting from the introduction of rational management measures, the greatest benefits would be derived from reduction in the cost of fishing. It should however be borne in mind that the enforcement of management measures may result in increased unemployment. It is therefore important that social implications be considered during discussions regarding the economic management of Mediterranean fishery resources. In view of this it was felt that fishery economists and administrators should be associated with the forthcoming activities, in the field of resources appraisal and exploitation.

40. Due to the particular hydrological features of the Mediterranean, the productivity of the fisheries is, generally speaking, lower than that of most oceans; the exploitation of the stocks should, for this reason, be undertaken with caution. However a number of delegates pointed out that not all stocks in this sea are presently over-exploited. The most serious is the condition of the demersal stocks in the north-western Mediterranean. Some pelagic stocks could bear a more intensive exploitation. Finally, the fishing effort should be better distributed, particularly as regards demersal species. Several delegates drew attention to some species, the full exploitation of which is hampered by lack of consumer demand. Among those species are the horse mackerel in Spain and the sardine in Italy.

41. A number of delegations, even though not minimizing the need for management, drew attention to specific problems with which any proposed management scheme in the Mediterranean would be faced. It was pointed out that the abundance of certain stocks was interdependent and little was known of the factors governing the ecological balance of species within the region. At the same time a characteristic of the Mediterranean is the presence of a large number of species to all of which management measures should be applied but it would be difficult nevertheless to exploit all stocks at their optimum level.

42. While agreeing that it was an important aim of development policy to improve the social and economic conditions of fishermen, one delegation expressed the view that this could, especially in the short run, only be achieved by training. This should not be limited to fishermen but should be extended also to include administrators and research workers. Consequently the Council recommended to its member nations to intensify their cooperative efforts and requested FAO to facilitate and encourage them in this task.

43. Several delegations commented on the need to find market outlets for underutilized species. Reference was made to the fact that consumers' preferences varied throughout the region: for example grey mullet was highly regarded in Tunisia and the eastern Mediterranean but was not a preferred species in the north-western part of the region. This suggested that there was the possibility of increased trade to mutual advantage. As a means of identifying other such possibilities, FAO was asked to consider the preparation of

a chart indicating relative preferences for various species between and within countries. It was suggested that this could best be done by the use of price relatives. In view of the increasingly critical supply position in the region and the associated economic problems, the decision to bring economic studies within the terms of reference of the working parties was welcomed.

44. The Council also considered the question of economic studies of aquaculture. It was stated that most of the work so far carried out in the region on this subject had been on the scientific and technical problems of increasing production. Little work had been done on the costs of producing fish by cultivation or on the returns that could be obtained from such activities. Such information would be valuable in trying to attract investment into an activity which could be an important source of food supply. It was indicated that many of the techniques used by agricultural economists to improve the cost effectiveness of agriculture production were equally applicable to fish culture though as yet hardly applied. It was also suggested that research into the economics of land use would indicate the returns which could be obtained from putting under fish culture, especially in coastal areas, land which might otherwise be used for alternative purposes.

45. Many participants emphasized the potential importance of aquaculture but one delegation warned against over-optimism concerning marine finfish and crustaceans. It was claimed that a certain mythology surrounded the subject and massive increases in production were unlikely. One participant suggested that feed for cultivated fish would be a suitable use for the presently unmarketable fish species to which reference had been made earlier.

V. INTERNATIONAL COOPERATION

46. The Secretariat informed the meeting of GFCM's continuing dynamic contribution to the Cooperative Investigations of the Mediterranean (CIM) and of the active part taken by some experts of the Council in the preparation of the CIM operational programmes in the field of biology and fisheries. These programmes have been submitted by the Operational Unit of CIM to participating governments; however, only a few of them have so far indicated the means they intended to put at the disposal of CIM for the implementation of the programme; nevertheless, the Council was pleased to learn that a reorganization of oceanography and fisheries departments, now in progress in some member countries, will facilitate the development of research and an effective participation of these departments in CIM.

47. The Council noted the efforts of the GFCM Executive Committee and Secretariat to organize jointly with the International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM) in Athens, in 1972, the Symposium on Brackishwater Aquaculture and the Eleventh Session of the GFCM and Twenty Third Plenary Assembly of ICSEM, in compliance with Resolution 2/69 of GFCM's Tenth Session recommending that cooperation with ICSEM be increased. The Council further noted that the Commission had been unable to agree to these proposals for the present year. It emphasized however that complementation of the activities of GFCM and ICSEM was steadily improving and that, consequently, the present collaboration between these two organizations should be enlarged.

VI. ECONOMIC AND DEVELOPMENTAL ASPECTS OF THE MEDITERRANEAN FISHERIES

48. The subject matter of this Agenda item covered rather similar grounds to that of item 7. It was explained by the Secretariat that while both items were concerned with problems of fisheries development in Member Countries, the purpose of Agenda item 7 had been to provide a framework for subsequent discussions in the working parties while the present paper was intended to provoke discussion on possible subjects for the Symposium on Economic Problems of Fisheries Development in the Mediterranean. Topics under three broad areas - Resource Management, Marketing, and Planning - were put forward for discussion.

49. Reference was again made to the need for the management of Mediterranean fish resources and, in this respect, the Council recalled the Resolution XI/72/2 (see Annex VII, page 57) requesting the convening of a meeting of senior fishery officers. However, while there was a general awareness of the economic and social problems of possible management action, there was little quantitative information to guide administrators in framing legislation. It was therefore suggested that papers should be prepared describing for certain countries the social and economic problems that would be encountered by the introduction of effective stock management measures. It was further suggested that country statements giving details of existing regulations governing fishing might be prepared as background papers. Such papers would also have a usefulness which extended beyond the Symposium and could be up-dated from time to time.

50. In discussion, attention was again drawn to the problems of resource management in the Mediterranean although it was accepted that recognition of the difficulties did not imply that an attempt should not be made to solve them. Many speakers referred to the rather particular hydrological geomorphological and biological conditions of the Mediterranean which had the characteristics of a semi-closed sea and whose fisheries differed in a number of important aspects from those of the North Atlantic. In addition to the technical problems associated with the nature of the resources, management measures would need to take into account the fact that some stocks were not yet subject to the optimum rate of exploitation: such a situation should allow for a better distribution of the fishing effort and some countries could still rationally increase total investment in their fishing industries.

51. Several delegates supported the suggestion that FAO should undertake a perspective planning study for the countries of the Mediterranean basin. The view was expressed that there was little prospect that the future demands for fish generated by rising living standards and population increase could be met from the region's own resources. In the circumstances, a document presenting a clear and quantified statement of the problems together with alternative policies for overcoming them would be of considerable value.

52. There was also support for the proposal to bring marketing studies within the ambit of the Symposium. The importance of wider market outlets for the better management of the fisheries was stressed. It was pointed out by a number of delegates that one of the factors inhibiting a diversion of effort away from the heavily fished demersal stocks and toward the underexploited pelagic species was the poorer marketing prospects for the latter. In this connexion it was a particular cause for concern that as living standards rose, demand would increasingly shift to demersal species which, unfortunately, were those in shorter supply. It is therefore to be feared that the observed trend be irreversible and, in view of this, further support was given to the proposal to prepare a chart indicating consumer preferences.

53. To facilitate preparation for the Symposium, the Council agreed to refer more detailed discussion to a Working Party on Economic Problems of Fisheries Development which would meet during the course of the present session.

VII. MEETING OF THE EDITORIAL BOARD

54. The Editorial Board met on 10 March 1972 under the Chairmanship of Mr. A.Z. Ben Mustapha. In preparing the list of the documents to be submitted for final approval of the Executive Committee, the Board followed the criterion of selecting among the papers presented to the Symposium and the Session those considered to be most generally useful in view of the presentation of substantial original data or of a comprehensive review of a particular subject. However, the printing of some selected contributions will depend on improvements, modifications or additions as specified by the Editorial Board. The Secretariat will inform the authors accordingly.

VIII. ADOPTION OF THE REPORT

55. The following four working parties met from 8 to 10 March 1972:

- Resources Appraisal and Exploitation (see Annex VII, page 57)

- Fishery Statistics (see Annex VIII, page 61)

- Aquaculture and Fisheries in Brackish Waters (see Annex IX, page 65)

- Economic Problems of Fisheries Development (see Annex X, page 69)

Their reports were approved by the Council, together with the report of the plenary sessions.

In view of facilitating the drafting of these documents and avoiding possible mistakes, the Council expressed the wish that academic titles be omitted from the names of persons cited in the text.

IX. ELECTION OF CHAIRMAN AND VICE-CHAIRMEN

56. The Council elected:

Chairman	Mr. A.Z. Ben Mustapha
First Vice-Chairman	Mr. S. Alfirević
Second Vice-Chairman	Mr. C. Laskaridis

The first two were elected unanimously with one abstention, and the latter unanimously.

X. DATE AND PLACE OF THE TWELFTH SESSION

57. The delegation of the People's Republic of Bulgaria transmitted to the Council, on behalf of its Government, an official invitation to host the Twelfth Session. The Council accepted this invitation and thanked the Bulgarian Government for its kind offer. The Session will take place in March 1974 and the exact site and date will be fixed by the Chairman of the GFCM, in consultation with the Director-General of FAO.

ANNEX I

GFCM MEMBER NATIONS

Algeria

Bulgaria

Cyprus

Egypt

France

Greece

Israel

Italy

Lebanon

Libya

Malta

Monaco

Morocco

Romania*

Spain

Tunisia

Turkey

Yugoslavia

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* Romania became a member on 19 February 1971

ANNEX(E) II

LISTE DES PARTICIPANTS
LIST OF PARTICIPANTS

I. ETATS MEMBRES/MEMBER NATIONS

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Annex III

AGENDA

1. Opening of the Session

2. Adoption of the Agenda and arrangements for the Session

3. Report of the Executive Committee and the Secretariat

4. Activities of the GFCM working parties

   (a) Demersal Resources Appraisal and Exploitation
   (b) Fishery Statistics and Biological Sampling
   (c) Aquaculture and Fisheries in Brackish Waters
   (d) Utilization and Marketing of Fish and Fishery Products

5. Results and follow-up of the GFCM Symposium on Brackishwater Aquaculture

6. Marine pollution in the Mediterranean area and its effects on living resources and fishing

7. Problems of fisheries development in the Mediterranean area

8. International cooperation

   (a) Cooperative Investigations of the Mediterranean (CIM)
   (b) Other cooperation

9. Symposium in conjunction with the Twelfth Session

10. Any other matters

11. Adoption of the Report

12. Election of officers

13. Date and place of Twelfth Session

Annex IV

LIST OF DOCUMENTS PREPARED FOR THE SESSION

GFCM/XI/72/1	Provisional Agenda
2	Annotated Provisional Agenda
3	Provisional Timetable
4	Report of the Executive Committee and the Secretariat
5	Report of the Second Session of the Working Party on Demersal Resources Appraisal and Exploitation
6	Report of the Third Session of the Working Party on Demersal Resources Appraisal and Exploitation
5,6 Sup. 1	Foreseeable effects of possible regulatory measures for managing demersal stocks in the western Mediterranean
7	Report on the activities of the Working Party on Fishery Statistics and Biological Sampling
8	FAO/GFCM Species Identification Sheets for Statistical Purposes
9	Report on the Third Session of the Working Party on Aquaculture and Fisheries in Brackish Waters
10	Report of the Third Session of the Working Party on Utilization and Marketing of Fish and Fishery Products
11	Summary Report of the Symposium on Brackishwater Aquaculture
12	Marine Pollution in the Mediterranean and its Effects on Living Resources and Fishing
13	Problems of Fisheries Development in the Mediterranean Area
14	Cooperation of GFCM with other International Organizations
15	Economic and Developmental Aspects of the Mediterranean Fisheries

ANNEX V (1)

ADDRESS AT OPENING SESSION

by

Mr. K. Skiadopoulos
President of the Institute of Oceanographic and Fishery Research

Mr. Minister, Mr. Chairman,
Mr. Assistant Director-General of FAO,
Delegates, Ladies and Gentlemen,

As president of the Institute of Oceanographic and Fishery Research, I am particularly delighted that the Institute should have been entrusted with the task of organizing two international meetings connected with fishery, namely a Symposium on Brackishwater Aquaculture and the Eleventh Session of the General Fisheries Council for the Mediterranean. We have done our utmost to facilitate the work of the delegates, under the hospitable roof of the Eugenides Foundation.

The Institute, following the trends of research on marine resources and their fuller utilization, is already participating in a thorough study of the subjects with which the GFCM is concerned and we hope that it will take an active part in your work.

The problems of fisheries are increasing in magnitude and complexity at the world level and many efforts still have to be made in order to resolve those difficulties of an economic nature which arise. It may be that a good many particular causes, pollution for instance, have important effects on fisheries; on the other hand, we need more data on marine environment; we need to know how the changes in its characteristics affect the habits of fish and their number; we must also acquire the knowledge that will enable us to increase the utilizable quantity of the resources, thus helping the future generations to enjoy a more abundant nutrition.

Today man is struggling to conquer space. That effort is undoubtedly interesting. Nevertheless, a more complete knowledge of the means to utilize and exploit in the best possible way the food resources enclosed in the seas is perhaps a more obvious challenge

In expressing to you my assurance that the work of the Council will be crowned with success, I bid all of you welcome in our country.

Annex V (2)

ADDRESS AT OPENING SESSION

by

Mr. P. Papapanayotou
Under-Secretary of State for Agriculture

Mr. Chairman, Mr. Assistant Director-General of FAO, Ladies and Gentlemen,

I am particularly happy to welcome you and to open the work of the General Fisheries Council for the Mediterranean. I have also the pleasure of conveying to you the cordial greetings and good wishes of the Prime Minister, M.G. Papadopoulos.

Set up within the framework of FAO, the GFCM, whose Eleventh Session begins today, is well known to us for the many successful achievements to its credit and we look forward with confidence to its future activities.

Food is one of the major problems facing mankind and the sea holds many of our hopes. They can become realities if we proceed discreetly to a proper planning of marine resources. Our aim must be, in fact, the development and not the exhaustion of these resources.

The Mediterranean, as we know, is not a rich sea. Our countries, however, and Greece in particular, are making efforts to fertilize the appropriate areas. Indeed, in Greece we attribute great importance to fishing. Beginning this year, we shall make it easy to obtain loans for the purpose of modernizing the industry, establishing the necessary infrastructures, developing fish culture and, above all, promoting fishery research with the decisive aid of the Oceanographic Institute.

Among the subjects to be considered by your Council is that of pollution and its effects on marine organisms. We are particularly concerned about this problem but, fortunately, our specialized bodies placed under the aegis of the Vice-President of the Council of Ministers, are still keeping check on the situation.

In wishing you the utmost success in your work the results of which we look forward to with particular interest, I declare open the Eleventh Session of the General Fisheries Council for the Mediterranean.

ANNEX V (3)

ADDRESS AT OPENING SESSION

by

Mr. F.E. Popper
Assistant Director-General (Fisheries)

Mr. Chairman,
Your Excellency,
Distinguished Delegates, Honoured Guests, Ladies and Gentlemen,

On behalf of the Director-General of FAO, I would like to express to the Greek Government my sincere gratitude for acting as host to this Eleventh Session of the General Fisheries Council for the Mediterranean and for the excellent arrangements it has made for this meeting.

Although this is the first time that I have the privilege of addressing your Council in session, I am very pleased to recognize many of you whom I had the opportunity to meet on other occasions.

It is just over four years that the Ninth Session in Split took the decision to entrust major tasks of the Council to working parties and I would like to make some comments on their achievements. An important part of your Agenda is devoted to the activities of these bodies which, for the time being, cover the fields of demersal resources appraisal and exploitation; fishery statistics and biological sampling; aquaculture and fisheries in brackish waters; and utilization and marketing of fish and fishery products. Your last session, recognizing that they constituted the most efficient means of promoting the programme laid down for the development of the Mediterranean fisheries, recommended that FAO assist, to the maximum extent of its financial and technical means, the inter-sessional meetings of these groups. We were able to follow this advice and have provided funds for the convening of four sessions of these working parties. I wish, in this connection, to express my appreciation to the French delegation for the support given in the organization of the Third Session of the Working Party on Aquaculture and Fisheries in Brackish Waters, in Sète, last October.

The recommendation I have just referred to recognized that the working parties could complete their tasks satisfactorily only if the same selected experts met at regular intervals and it was therefore recommended that member countries include these experts in their national delegations to the sessions of the Council. I am pleased to see that this advice also has been followed and that a large number of experts are here today. This, I am sure, will allow for profitable discussion when the working parties meet, from Wednesday afternoon to Friday evening.

In my opinion, a great deal of useful work has been done in the field of stock evaluation. It is perhaps the first time in the history of fishery research in the Mediterranean, that this problem has been studied so carefully, at least on a regional basis. A discussion of the findings of the experts will follow shortly but I would like to stress the fact that, over the last few years, the quantities landed annually have dropped regularly - and the catch rates to a greater extent - despite the simultaneous increase in fleet size, an obvious indication of overfishing. It is therefore urgently necessary to take steps to safeguard the stocks and maintain the economic profitability of the fisheries. For this purpose it has been suggested that the Council, when discussing item 4a of its Agenda, might

wish to sep up an ad hoc committee to review regulatory measures that might be applied by Member Countries, taking into account regional requirements for conservation and management.

In the field of fishery statistics, your specialized working party has now achieved some of the basic goals assigned it by your Ninth Session, namely, the development of a standard reporting system of marine catch by species category and sub-area of capture and the conduct of an enquiry on fleet size and structure. I hope that national statistical offices will make use of the sets of forms especially prepared for the Mediterranean, and that the efficient functioning of the system will allow for the preparation of a Regional Bulletin of Fishery Statistics and for the development of a more elaborate reporting system to include, for example, the statistics on fishing effort required for stock evaluation.

The success of the GFCM Cooperative Programme of Research on Aquaculture in which more than twenty Mediterranean institutes and laboratories now participate on a purely voluntary basis, shows the great interest of most member countries in the development of brackish-water aquaculture in a region where the extension of sea harvesting is strictly limited.

The Symposium held here last week proved that scientific and technical problems of fish culture may be overcome but it also found that the economic aspects of this activity are rather neglected; I have the feeling moreover that these findings may apply to a large extent to the Mediterranean fisheries as a whole, and, for this reason, I believe that the Symposium on Economic Problems of Fisheries Development in the Mediterranean, which your Executive Committee recommended to be organized in conjunction with your next session, would be very timely because it should provide basic information required for the formulation of more effective fishery policies.

I would now like to refer to marine pollution, which your last session considered particularly acute in this region. The first action the Council recommended (the preparation of a survey on the state of pollution in the Mediterranean) has now been implemented and the report is being submitted for your attention. This report gives a clear picture of the danger threatening the resources in their natural state and particularly the possible development of coastal aquaculture. The study will provide the Council with a good basis for further action which, I foresee, may involve two aspects, a scientific one which might be handled under the aegis of the Cooperative Investigations in the Mediterranean and a political one which would call for action from nations bordering the Mediterranean and the Black Sea in order to safeguard natural resources from the harmful effects of pollution.

I assure you that the Director-General of FAO would be prepared to consider favourably your suggestions to speed up action required in the area to protect living resources and fishing through a regional agreement. The Department of Fisheries, for its own part, is willing to support to the best of its ability and means the increasing efforts of your Council towards the most rational utilization of the marine resources the Mediterranean environment can provide.

Annex VI

REPORT OF THE SYMPOSIUM ON BRACKISHWATER AQUACULTURE (Athens, 2-4 March 1972)

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REPORT OF THE SYMPOSIUM ON BRACKISHWATER AQUACULTURE

INTRODUCTION

1. The GFCM Symposium on Brackishwater Aquaculture was held at the Eugenides Foundation in Athens, 2-4 March 1972; it was attended by about 80 participants (see Annex II, page 17) from 12 countries and three international and governmental bodies.

2. At the opening of the Symposium, Mr. K.D. Kiortsis, Vice-President of the Institute of Oceanographic and Fishery Research, and Chairman of the Organizing Committee of the GFCM Session welcomed the participants. He emphasized the importance of coastal aquaculture in the Mediterranean and the need for early action to control aquatic pollution, if aquaculture has to be expanded and intensified in the region. Mr. T.V.R. Pillay, Senior Fishery Officer (Aquaculture), Department of Fisheries of FAO, also welcomed the participants on behalf of Mr. F.E. Popper, Assistant Director-General (Fisheries) of FAO and conveyed the best wishes of the Director-General of FAO. He said that FAO attaches great importance to this Symposium, not only because of the important role that aquaculture can play in increasing fish production in the region, but also because it will be discussing the results achieved in a unique experiment in voluntary cooperation of research institutions, viz. the FAO/GFCM Cooperative Programme of Research on Aquaculture (COPRAQ).

3. He then introduced Mr. J.-M. Pérès, Director, Marine Station of Endoume, France, who was nominated as Chairman of the Symposium. In his opening remarks, the Chairman made an overall review of the needs, prospects and problems of aquaculture development (see Appendix III, page 51).

4. The Agenda (Appendix I, page 47) was adopted.

5. The Symposium was held in five meetings, each with a discussion leader assisted by a small number of panel members in the case of the first four meetings. Mr. Idyll (FAO) acted as the Rapporteur. A Resolutions Committee, consisting of the following, met on 3 March to draft the resolutions for consideration by the Symposium:

J.-M. Pérès — Chairman
H. Ben Alaya
R. Raimbault
J.-M. San Feliu
G. Scalfati

6. A total of about 20 contributions were presented (see Appendix II, page 49).

I. STATUS OF COASTAL AQUACULTURE IN THE MEDITERRANEAN

Discussion Leader: J.-M. Pérès
Panel Members: A.R. El Bolock
J.-M. San Feliu
G. Scalfati

7. In the discussion of the general status of coastal aquaculture in the Mediterranean, it became clear that this industry is of special importance to the countries of the region. This is partly because the waters of the Mediterranean are relatively poor in productivity compared to other regions of the world oceans where major fisheries exist. Further, there are over a million hectares of coastal areas in the Mediterranean which are suitable for aquaculture. Therefore culture may be the best or even the only means of making substantial increases in the production of seafood in the region, provided it is possible to maintain domestic pollution within acceptable limits and chemical pollution can be avoided.

8. From the reports on the status of aquaculture in countries around the Mediterranean several points emerged.

9. First, there has been considerable effort in this field in recent years, reflecting increased interest and improved technology.

10. Secondly, the large yields reported for some species of fish and especially shellfish in recent years have given hopes of considerable increase in the production of seafood through aquaculture.

11. Thirdly, there has been a number of introductions of exotic species. The meeting expressed concern about indiscriminate introductions and urged that careful ecological studies to determine the consequence of introductions should be carried out before decisions are made in this regard. When any introduction is to be made, it is essential to ensure that the animals to be introduced are disease-free and there is no likelihood of predators and pests being accidentally brought in.

12. It was apparent that conditions vary greatly among the countries of the region in respect to several factors related to aquaculture.

13. These include the differences in market preferences. The choice of species to be raised depends heavily on this and on export marketsthat might be established. More market research seemed to be necessary.

14. Further, differences in the availability of labour differ greatly. On the whole, however, it was noted that, since many of the countries of the region are industrially advanced, this will have an important bearing on the methods of culture to be adopted.

15. An over-riding concern about industrial and sewage pollution and its effects on the future of aquaculture was an obvious thread through the whole of the discussion in this and subsequent meetings.

16. The urgency of preserving sites for aquaculture was repeatedly stressed. Coastal zone areas have multiple uses and proper procedures for making appropriate decisions have to be established. The need for social and economic research in this and related fields was also emphasized.

17. Integrated planning for the development of coastal zone areas was considered to be of great importance. One of the essential activities to be undertaken in the Mediterranean countries is an assessment of the potential for aquaculture development, on the basis of which a programme of development has to be formulated, setting targets of production and the necessary research, training, extension and investment facilities to be established.

II. CONTROLLED BREEDING AND INTENSIVE CULTURE OF MOLLUSCS

Discussion Leader: J.-M. Pérès
Panel Member: R. Raimbault

18. Culture of molluscs is the most advanced form of aquaculture in the Mediterranean region. It has a long history, based on the tradition of centuries. The papers presented at this meeting showed that modern science could contribute to the improvement and extension of this old industry.

19. The species of greatest importance are oysters and mussels, while other species are also cultured on a smaller scale. Mussels and oysters are often raised together in the same areas. Generally there does not seem to be any major competition between the two species, especially since the duration of culture is only one year. However, there are cases where competition between the two species has been reported. The reasons for this are not apparent although presumably competition for food is a related factor.

20. The hanging method of culture for mussels and oysters is practised in the Mediterranean. This 'three-dimensional culture system', which makes it possible for the molluscs to obtain food from larger volumes of water, explains the rapid growth obtained. However, experiments of bottom culture have recently been initiated on the French coasts. The development of this technique, which is new to this region, might result in the expansion of mollusc culture in some areas and in increased production.

21. The introduction of new methods of culture, such as oyster culture in hanging cages, could result in saving labour. It could also bring about improvement in the quality of the product.

22. The question of artificial feeding of oysters was raised; in some cases benefits could be obtained through feeding at certain times, although the cost factor could limit the use of this technique.

23. Attention was called to the fact that an increasing mortality during culture is more frequently reported for mussels and to a lesser extent for oysters. This seems to be linked to increasing pollution which is a matter of concern in all countries where mollusc culture is practised.

24. As regards spat production in hatcheries, it was agreed that controlled breeding and rearing of larvae in tanks should be continued; such studies contribute to clarifying a number of problems relating to the provision of optimum ecological conditions and also help in understanding observed natural phenomena. Subsequently, such work would make it possible to develop useful races by genetic selection and undertake hybridization. The success of commercial production of spats to meet the needs of mollusc culture will depend mainly on the comparative costs of hatchery production and collection from traditional natural sources. In this connexion, it was reported that possibilities exist for the collection of the spat of the flat oyster (Ostrea edulis) in certain areas on the Mediterranean coast of France; an expanded programme of research in this field is envisaged.

25. The results of various studies of great practical importance on oysters and mussels were presented, particularly on growth related to depth of immersion of molluscs and variations of the index of condition as a function of different ecological factors.

26. The recent large-scale mortality of the Portuguese oyster (Crassostrea angulata) on the Atlantic coast of France, and its cause, were discussed. The Symposium concluded that particular attention should be devoted to the study of the diseases of molluscs, as well as other cultivated species and to the risks inherent in indiscriminate introduction of exotic species.

27. The most favourable ecological conditions for mollusc culture in the region, formed the subject of an interesting discussion. It was concluded that, from the ecological point of view, there are possibilities for the expansion of mollusc culture in most countries of the Mediterranean and that attention of the Governments should be drawn to the economic potential of this industry. It was pointed out that in some countries where such possibilities exist, efforts should also be directed to market studies and consumption promotion.

III. CONTROLLED BREEDING AND INTENSIVE CULTURE OF CRUSTACEA

Discussion Leader: J.-M. Pérès
Panel Members: H.J. Ceccaldi
J.-M. San Feliu

28. The papers presented on crustacean culture, and the discussions that followed, emphasized the fact that this group presents especially difficult problems to the culturist. A principal reason for this is related to the complicated life histories of these animals, and the requirements for several kinds of food for various life stages. It is thus necessary at present to erect multiple culture operations, to raise the food organisms, particularly for the larval stages.

29. In the Mediterranean there may not be several native crustacean species suitable for culture, but this has not yet been determined. In the meantime some exotic species have been introduced or have immigrated into this sea. Once more, concern was expressed about the possible consequences of this on the native species and on the environment. More studies of this were urged.

30. The choice of species to be cultured is of prime importance: the principal criteria being market demand, rapid growth and satisfactory yields.

31. It was pointed out that there are several culture methods available, and a choice among these has to be made for each operation. The traditional method, used successfully in the Orient and other regions, provides partial protection from predators and natural food, the growth of which may be enhanced by fertilization. It was stressed that, while this method may serve for some areas, in others it will probably be necessary to use more sophisticated methods, if not now, at least in the future. Otherwise a principal advantage of aquaculture will be lost, namely the overcoming of problems associated with variations in natural yields. Eventually full control of the life cycle was seen to be necessary.

32. The Symposium felt that the supply of food is the principal problem to be solved in crustacean culture. For shrimp larvae, for example, the necessity to depend on the brine shrimp (Artemia salina) is a limiting factor, and research is needed to find substitutes. For the adults, experience has shown that some natural foods (ground clams, fish and similar materials) are not always fully satisfactory nutritionally; moreover they are difficult to handle and are often expensive, especially in labour costs. Manufactured feeds seem to be more satisfactory than some natural foods.

33. Much more research is necessary on the nutritional requirements of crustaceans before satisfactory feeds can be developed. Many feeds now used have been developed privately and the formulas are proprietory. It is necessary for government and other public laboratories to undertake further research in this field. Feed costs are especially related to the high cost of animal proteins. Research is needed on how animal proteins can be replaced by cheaper plant proteins, but maintaining satisfactory growth rates as well as necessary organoleptic qualities.

34. Studies on the propagation of shrimps were reported. Scarcity of gravid females in certain areas and at some seasons prevents year-round culture that is probably necessary for profitable operations. Not only is culture from the egg essential in many cases, but it will eventually be necessary to close the breeding cycle and gain the ability to raise and maintain brood stocks. It was further emphasized that only by this last means can genetic selection for fast growth and desirable market characteristics be made.

35. It was noted that a fully developed modern technology for raising shrimps commercially on a large scale, still does not exist. Considerable pilot scale studies are therefore necessary before heavy commercial investment is recommended for shrimp farming in the region.

36. Nearly all the discussion in this meeting centred on shrimps, but interest was also expressed in the culture of lobsters. It was pointed out that lobster culture is not so encouraging now. For Homarus the long time required to raise individuals to market size makes the cost of operation excessive. For Palinurus and other spiny lobsters it has not yet been possible to carry the larvae through to the demersal stage even in the laboratory, and so commercial operations based on hatchery production of larvae can be envisaged only far in the future. Experience in Japan in fattening young lobsters captured in the wild may have some relevance in the Mediterranean region.

IV. CONTROLLED BREEDING AND INTENSIVE CULTURE OF FINFISH

Discussion Leader: J.-M. Pérès
Panel Member: A.R. El Bolock

37. Work in the culture of finfish in brackish waters has lagged behind such studies in fresh waters, but it was apparent from the papers and discussions in this meeting that this activity is increasing rapidly in the Mediterranean. The outlook is encouraging for the culture of several species including grey mullets (Mugil spp.), the eel (Anguilla anguilla), the sea bass (Dicentrarchus labrax) and the gilthead bream (Sparus auratus).

38. The search for fast-growing fishes with high market value is a necessary preliminary to successful operations. With increasing ability to transport seafood considerable distances, different species may be raised even if they do not have strong markets in the home country.

39. The importance of research on the life histories of species which might be cultured was stressed. In particular, the fullest possible understanding is necessary on natural reproduction and food. This fundamental research must be followed as quickly as possible by practical work on the design and management of ponds and other enclosures, on the development of feed, on controlled reproduction and on other related matters.

40. Interesting papers on the growth rates of a number of species were presented at the meeting. Nutritional studies were reported, especially in relation to the requirements of amino acids and proteins. As expected, it was found that protein requirements are highest for young animals. Valuable new data were presented on Sparus auratus. The opinion was expressed that for some species studied, prepared foods were more satisfactory than natural foods in terms of growth and cost of production. But caution was urged in extending this generalization too far, since in some cases scrap and natural wastes have also given good results.

41. It was observed that studies on the controlled breeding of finfish is making satisfactory progress under the FAO/GFCM Cooperative Programme of Research on Aquaculture. The success achieved in the induced breeding of Mugil spp., Dicentrarchus labrax and Sparus auratus has now to be used for the commercial production of fry. This work is of special importance where fry and fingerlings are scarce in the wild state.

42. There is a rapidly growing interest in the culture of eels and the culture of trout in sea water. It was reported that both these have now reached a stage when commercial ventures can be started.

43. Although reliable data are not yet available to estimate the rate of profitability of fish culture, it was clear from the general status of operations, that the return on investment is sufficiently attractive.

V. CONCLUSIONS AND RESOLUTIONS

Discussion Leader: J.-M. Pérès

44. The discussion leader briefly summarized the major conclusions of the Symposium through the presentation of the resolutions that were formulated by the Committee set up for that purpose (see paragraph 5, page 37). The following eight resolutions were adopted unanimously.

RESOLUTION AQ/72/1

AQUACULTURE PLANNING

The Symposium:

Recognizing that coastal aquaculture has an important economic role in food production in the countries bordering the Mediterranean and that many scientific institutions are at present actively engaged in biological and technological research in this field,

Realizing that social and economic needs of countries have to be taken into full consideration in the development of aquaculture,

Noting that the coastal areas have to be harmoniously developed for multiple uses,

Convinced that integrated planning has to be undertaken for the rapid and orderly progress of aquaculture in the Mediterranean region, where this industry is of great potential importance,

Recommends that the GFCM urge its member governments to carry out detailed surveys of aquaculture sites and assess the development potentials and the socio-economic aspects involved, and,based on the results of such surveys, formulate integrated plans for development including production targets and research, training, extension and investment services to be established;

Suggests that, in order to facilitate this activity, the inventory of brackishwater areas prepared by the GFCM Working Party on Aquaculture and Fisheries in Brackish Waters be updated and expanded to include detailed data on their suitability for aquaculture.

RESOLUTION AQ/72/2

COASTAL BRACKISHWATER AQUACULTURE AND AQUATIC POLLUTION

The Symposium:

Noting from the country reports and discussions that aquatic pollution is a major danger to existing aquaculture installations and a handicap to the future expansion of the industry,

Recognizing that the production and marketing of shellfish and finfish have already been seriously affected in many areas as a result of pollution,

Recommends that studies on aquatic pollution and the development of procedures for its control, as far as coastal aquaculture is concerned, be included in the FAO/GFCM Cooperative Programme for Research on Aquaculture,

Further recommends that the GFCM urge its member governments to take early action to protect from pollution the stocks and the existing as well as potential aquacultural sites.

RESOLUTION AQ/72/3

POTENTIAL IMPROVEMENTS OF NATURAL STOCKS IN LAGOONS AND SEMI-ENCLOSED BAYS

The Symposium:

In view of the frequently reported depletion of many coastal stocks in the Mediterranean,

Realizing that hatcheries established for economically important species would be capable of producing much larger quantities of larvae and juveniles than can be cultured in ponds and enclosures to marketable size,

Noting that stocking operations have resulted in the improvement of the fishery resources in some types of water bodies when the concerned species were grown to a suitable size before stocking,

Fully recognizing that experiments of this nature will entail considerable effort, expenditure and time,

Recommends that countries establishing large hatcheries and rearing facilities consider initiating suitably designed experiments in stock improvement after appropriate studies of the ecological conditions including availability of food and prevalence of predators, as well as possible dispersion of released animals.

RESOLUTION AQ/72/4

INTRODUCTION OF EXOTIC SPECIES

The Symposium:

Realizing that, with the expansion and intensification of aquaculture, many countries have started introducing fish and shellfish species into the region from other areas,

Cognizant of the dangers inherent in the indiscriminate introduction of exotic species which can, in particular, result in the accidental introduction of diseases and predators as also cause major changes in ecosystems,

Recommends that the GFCM urge member governments to prohibit such introductions, before appropriate investigations are carried out to assess their effects,

Further recommends that when introductions have to be made, necessary inspection and certification be arranged to ensure that all consignments imported are disease-free.

RESOLUTION AQ/72/5

FISH AND SHELLFISH DISEASES

The Symposium:

Noting that the problem of diseases and mortality of fish and shellfish will become increasingly serious with the intensification of aquaculture in the region,

Recognizing that present knowledge is not sufficient to control all the diseases,

Recommends that research institutions initiate or intensify pathological and disease treatment studies relating to coastal species.

RESOLUTION AQ/72/6

ARTIFICIAL FEEDS

The Symposium:

Recognizing that suitable economic feeds may become essential for successful aquaculture of many species in the Mediterranean and that manufacture of fish feeds for coastal species is in a very early stage,

Recommends that work on the preparation of suitable feeds to meet the nutritional requirements of cultivated species be intensified in the research institutions of the region and that efficient formulations using locally available and cheap ingredients be developed;

Believing that the cost of feeds could be reduced if animal proteins can be replaced with vegetable proteins,

Considers that work on these lines should be pursued and expanded.

RESOLUTION AQ/72/7

TRAINING IN AQUACULTURE

The Symposium:

Recalling that the GFCM had, at its Tenth Session, requested FAO to explore the possibilities of organizing a training centre on brackish-water aquaculture in the Mediterranean region,

Noting that efforts made by FAO in obtaining funds from the United Nations Development Programme (UNDP) have not yet been successful,

Recommends that the UNDP be urged to give high priority to such a training centre in view of the importance that the countries of the region attach to the training of their personnel in this important field of work.

RESOLUTION AQ/72/8

FAO/GFCM COOPERATIVE PROGRAMME OF RESEARCH ON AQUACULTURE (COPRAQ)

The Symposium:

Noting with satisfaction that COPRAQ has made steady progress since its establishment in 1971,

Convinced that such cooperative efforts form the most practical means of implementing the Council's recommendations on research in this field,

Recommends that the Programme should be continued with participation of additional institutions and appropriate revision of problems for investigation as and when necessary,

It further recommends that the Programme continue to be coordinated by the GFCM Working Party on Aquaculture and Fisheries in Brackish Waters which should be reconstituted to deal with its changing functions and responsibilities, particularly with regard to the implementation of this Symposium's resolutions for expanded research and economic surveys;

Recognizing that the meeting of COPRAQ research workers from the participating institutions has greatly helped in the progress of various investigations,

Recommends to the GFCM that annual meetings of COPRAQ institutions should be held and that the Governments be urged to facilitate the organization of such meetings and the attendance of research workers concerned.

Appendix I

AGENDA

1. Opening of the Symposium
2. Adoption of the Agenda and arrangements for the Symposium
3. Status of coastal aquaculture in the Mediterranean area
4. Controlled breeding and intensive culture of finfish
5. Controlled breeding and intensive culture of molluscs
6. Techniques of shrimp culture
7. Conclusions, recommendations and requirements for future development
8. Adoption of the Report

APPENDICE II
APPENDIX

LISTE DES CONTRIBUTIONS PRESENTEES AU COLLOQUE
LIST OF CONTRIBUTIONS PRESENTED TO THE SYMPOSIUM

Situation actuelle de l'aquiculture sur les côtes méditerranéenne et sud-atlantique de l'Espagne (J.M. San Feliu)
Present State of Aquaculture on the Mediterranean and South Atlantic Coasts of Spain (J.M. San Feliu)

Etat actuel de la conchyliculture dans la région méditerranéenne de France (R. Raimbault)
Present State of Shellfish Culture on the Mediterranean Coast of France (R. Raimbault)

Etat de l'aquiculture en eau saumâtre en Tunisie (A. Azouz)
The State of Brackishwater Aquaculture in Tunisia (A. Azouz)

Etat actuel de l'aquiculture côtière en Yougoslavie (D. Morovic)
Present State of Coastal Aquaculture in Yugoslavia (D. Morovic)

Aspects généraux de la culture des crevettes (H. Ceccaldi)
General Aspects of Shrimp Culture (H. Ceccaldi)

Techniques d'élevage artificiel des crustacés (J.M. San Feliu et al.)
Techniques of Artificial Rearing of Crustaceans (J.M. San Feliu et al.)

Aspects généraux de la culture intensive des mollusques en Méditerranée (R. Raimbault)

Etat de l'aquaculture dans les eaux saumâtres d'Italie (Laboratorio centrale di Idrobiologia, Roma)

Problèmes essentiels de la pisciculture en eau saumâtre (G. Scalfati)

Observations sur la croissance de juvéniles de Dicentrarchus labrax (Linné) et Dicentrarchus punctatus (Bloch) placés dans un milieu naturel et nourris artificiellement (L. Pouliquen)

Etat général de l'aquaculture en France (P. Rouzaud)

Communication préliminaire sur la croissance des huîtres en fonction de la profondeur (D. Morovic - M. Simunovic)

The growth of oyster (Ostrea edulis) and mussel (Mytilus galloprovincialis Lmk.) in cultivated beds in the northern Adriatic Sea (M. Hrs.-Brenko and Z. Filic)

The relationship between reproductive cycle and index of condition of the mussel (Mytilus galloprovincialis Lmk.) in the northern Adriatic Sea (M. Hrs.-Brenko)

Report on the development of aquaculture in Egypt (A.R. El Bolock)

Etude préliminaire sur les besoins en protéines de la daurade royale (Chrysophrys aurata) (P. Luquet et J.J. Sabaut)
Preliminary study of protein requirements of the gilthead bream (Chrysophrys aurata) (P. Luquet and J.J. Sabaut)

First report concerning the breeding of the amberjack fish (T. Gamulin and A. Marchi)

Gonad development, spawning and rearing of Mytilus sp. larvae in the laboratory (M. Hrs.-Brenko)

Preliminary survey in locating areas suitable for aquaculture in Greece (N. Tsimenidis, N. Kriaris and K. Vamvakas)

Essai d'élevage des larves d'Anomia ephippium (N. Kriaris)

Valorisation of swampland and sea coasts of the regions of Yieras and Kallonis on the island of Lesbos (K.I. Ananiadis)

Une lagune de la Grèce du nord. Les pêcheries marines de Porto Lago-Thrace (C. Ananiadis)

Observations on the culture of Mytilus galloprovincialis in Greece (C. Rigopoulos).Abstract.

Alimentation artificielle du bar (Alliot, A. Febvre, R. Metailler)

Report on shellfish culturing along the Yugoslav coast of the Northern Adriatic (M. Hrs.-Brenko)

APPENDIX III

ADDRESS GIVEN AT THE OPENING SESSION OF THE SYMPOSIUM

by

J.-M. Pérès
Director of the Endoume Marine Station
and of the Oceanography Centre

Ladies and Gentlemen,

First of all, I wish to thank the Greek authorities and to say how pleased those attending this meeting are to be in this magnificent institute. On behalf of all, I particularly wish to thank the President and the Director-General of this foundation and our colleague, Professor Kiortsis, for welcoming us in terms for which we are very grateful.

Before starting the short introductory address which I have been requested to give by Mr. Pillay and Mr. Charbonnier, who organized this meeting from Rome, I should like all participants to spare a thought for the memory of Dr. Yashouv of Israel. Dr. Yashouv, who died recently, was one of the most outstanding personalities of Mediterranean aquaculture. He took a very active part in the meeting at Sète last October. His death deprives Mediterranean aquaculture of a particularly competent specialist, one whose views would have been invaluable for the results of the meeting now before us. I ask you to observe a few moments' silence in memory of Dr. Yashouv.

I believe that in a meeting of this type it is important to allow as much time as possible for the presentation of reports and statements and, above all, for discussion. In this introduction, which is necessarily of a general nature, I shall therefore endeavour to be very brief.

Aquaculture is one of the questions of the hour all over the world and is probably of special importance for the Mediterranean. It is universally known that the Mediterranean is a relatively poor sea. I do not know exactly what FAO's motive has been in promoting Mediterranean aquaculture for the past few years, but I think that part of the reason may be found in the Symposium on Mediterranean Depth Resources and their Exploitation, held at FAO in Rome in December 1969 and devoted to studying the bottom resources of the Mediterranean. After two days of discussion, one of the participants at that meeting said: "Yet, after all, instead of seeking what lies in the depths of the Mediterranean, it might be preferable to see what can be derived from the million hectares of brackish water surrounding the Mediterranean".

Since its last session, the GFCM has started a certain task; it has organized a meeting at Sète bringing together some 30 experts. During that meeting we learnt much from one another.

On the whole, therefore, the Mediterranean is a poor sea. Everyone knows that primary pelagic production there is fairly small. It lies in the moderately eutrophic zones with about 80 grammes of carbon per square metre per year, two thirds of which is unfortunately represented by recycle production.

The benthos of the Mediterranean is comparatively rich and in the purely marine zones production is fairly high, much higher than used to be thought. Unfortunately, the food chains in the Mediterranean benthic area are much less favourable and, in particular, much less well balanced than they are in northern waters. On the whole, then, the purely marine regions of high productivity, those regions from which one can hope to derive resources (the aim of both FAO and riparian countries) are very limited.

In point of fact, it is only in brackish waters, coastal lagoons, the areas of dilution of the great rivers, the limans, that one can find sufficiently eutrophic zones and structures of the trophic network capable of supplying economically worthwhile resources. The profitability aspect is very important and aquaculture, which is the subject of this symposium, is primarily a problem of economics. It is necessary to know what species of crustaceans, molluscs and fish should be cultivated, and this depends on the topographical, chemical and biological environment as well as on the conditions prevailing in local markets for sea products.

What direction can be taken by Mediterranean aquaculture? Well, we have to say that the Mediterranean is surrounded, on the whole, by developed countries; let us say that they are no longer developing countries and are not in the early stages of development. I therefore think that Mediterranean aquaculture should devote itself to noble species and not be the sort of aquaculture practised in many tropical regions, that is, intended chiefly as a source of quantities of cheap proteins even if quality is poor.

I shall review very rapidly a number of aspects of the aquaculture of molluscs, crustaceans and fish and at the end I shall try to pick out a few general ideas.

As regards molluscs, only the bivalves, mainly mussels and oysters, are interesting. Here the situation is quite special because the aquaculture of these species is based on ancient and often age-old tradition. Among the participants in this symposium there are specialists who possess much greater competence than I, so I shall not say much about this side of the subject. However, the aquaculture of bivalves is particularly difficult in the Mediterranean because of the rather low primary production even in lagoons. This phytoplankton production is certainly not comparable to that which in Spain has led to those extraordinary examples of mussel cultivation which have recently been achieved in the "rías" of Galicia. I believe efforts should certainly be made in this direction, possibly in some lagoons where plankton populations undergo fairly substantial movement according to the direction of the wind; in order to choose the most favourable sites, perhaps the floating raft system recently put into effect in the Netherlands might be useful.

With regard to crustaceans, I fear the Mediterranean is not a very favourable sea. However, there is one positive aspect due to the fact that this sea produces relatively few crustaceans and, especially, shrimps; there are therefore good sales outlets. Unfortunately, it is not very rich in large shrimps. In fact, the only important, interesting, cultivable native species is Penaeus kerathurus which is not very widespread. Fortunately, some Indo-Pacific species have been entering the eastern basin of the Mediterranean for some time; there are already three penaeids to be found on the coasts of Asia Minor and Egypt. However, the aquaculture of crustaceans is still a difficult business; it requires a high level of technical skill, it needs successive breedings of diatoms, rotifers and zooplankton as food for larvae and post-larvae in order to meet the gradual changes in the diet of the larvae as they grow. I am well aware that successful attempts have been made, for example, to feed the young larvae of penaeids with lyophilized diatoms, a method which actually produces an inferior growth yield. The aquaculture of crustaceans has doubtless only a relatively limited future in the Mediterranean, unless an artificial diet can be devised using industrially

composed feeds which will enable the cost price of the shrimp sold to be reduced; it must not be forgotten that the resounding success of shrimp aquaculture in Japan is due to the fact that shrimp sells at 1 000 yen, that is at FF 160/kg. In the Mediterranean, the price is, with certain exceptions, three or four times lower. Hence, if culture is to be profitable, an effort must be made and this effort will certainly have to be directed at industrial-type feeding.

In the case of fish, the prognosis is much more favourable. For fish, the problem of choosing the species to be cultivated is a very important one and is governed essentially by the local market conditions. For example, the grey mullets have no success in France, whereas in Tunisia they are highly appreciated, as also in Italy. On the other hand, the sea bass, Dicentrarchus labrax, and the sea bream, Sparus auratus, are species which attempts will be made to cultivate in France.

The initial problem involved in fish aquaculture is the favourableness or otherwise of the conditions governing the reproduction of natural populations. I feel it would be very interesting to study the conditions of artificial reproduction and total development of young fish, which has recently been successfully attempted for sea bream, in France as well as in Italy; it has also been done in Israel for mullet. In fact, this total command of the cycle is difficult, especially when it comes to making the transition from the small or laboratory scale or the scale of the small installation to that of industry. This question must certainly be examined with an eye to the future, and giving thought particularly to a possible increase in coastal pollution, which would hamper the reproduction of natural populations. Such studies should also be undertaken in the hope of later selecting quick-growing or highly fertile species. However, if short-term profit is sought, which, I stress again, must be the chief purpose of aquaculture operations, the major problem at the moment is primarily that of the growth of individuals and thus a problem of food. In the areas where larvae or juveniles can be caught at a fairly advanced stage of development it is certainly more economic to simply keep them out of the way of predators and to ensure their growth under the best possible conditions rather than to try to control the whole of the biological cycle. In other words, Mediterranean aquaculture will be first an aquaculture devoted to fattening.

Since the Mediterranean countries are, as I said just now, developed countries, everyone wishes to be by the sea; manufacturers want to install their refineries, steelworks, their factories for processing various ores; public and private bodies want to build holiday villages or blocks of residential housing; of all these activities, aquaculture is unfortunately the one which brings in the lowest profit. So we must not have too many illusions; in the Mediterranean, aquaculture will find it hard to obtain large areas of water as in the developing countries. Hence, Mediterranean aquaculture will necessarily be intensive, that is, in contradistinction to the age-old experience of the "Valli di Pesca" of the Adriatic, aquaculture in basins with artificial feeding. That is why I think that in the immediate future and without doing away with the research on reproduction whose advantages I pointed out a moment ago, the most urgent problem is food, for in these advanced countries, these old countries bordering the Mediterranean, it is very difficult to go in for intensive breeding using the fresh food which the weak resources of Mediterranean fisheries would probably often be unable to supply. Whether we wish it or not, we shall have to employ industrially manufactured feeds. These will have to be scientifically designed by biochemists to preserve the quality of the manufactured product. The cultivated fish must possess the same organoleptic qualities, the same gastronomic qualities if you prefer, as fish from natural populations. Such food, of course, must also be as cheap as possible and designed to produce the quickest possible growth. I cannot spell out here all the conditions which should underlie research on artificial feeding. This will certainly be dealt with in the working meetings. However, I am thoroughly convinced that if these fundamental needs are respected, aquaculture can and must become a profitable activity in the Mediterranean.

Having regard to its intensive nature, such aquaculture will raise general problems concerning which we possess only very sketchy knowledge at the moment: problems of parasitology and epidemiology for, of course, there are already and there will be an increasing number of epidemics, parasites and miscellaneous diseases among these fish which we will be squeezing, if we can say this, into relatively small volumes of water. All this involves scientific research, and unfortunately the epidemiology of marine animals is an avenue of research which is a long way from being developed at the present time. Yet the Mediterranean is, from this point of view, in no more unfavourable a position than most other regions of the world. There will also be, and to this point almost no one has paid any attention to date, problems of autopollution. I am not talking of pollution from outside, because it is quite certain that the fish breeder will always try to set up his installations in a spot where the water is clean. But when he puts large populations of crustaceans or fish into these basins, the waste produced by the metabolism of these animals will gradually pollute the environment. Our knowledge of these autopollution problems is virtually nil at the moment. There have been trials; it has been pointed out, for example, that the breeding of certain fish fry will proceed much more favourably when chlorella cultures are added to the environment; as the fish larvae in question do not eat chlorella, it is assumed that these algae destroy certain products of fish catabolism, especially nitrogen-containing products, by metabolizing them to their own profit; it is also possible that such chlorella release nutritive chemical substances which may be used by absorption by these fish, possibly via the gills or the intestinal mucous membrane. In short, the favourable effect of chlorella has been noted but the reasons are unknown; here is an extremely interesting field of research for the experts.

On a more general level (and this concerns practically all forms of aquaculture) I wish to stress two points whose interest is not purely Mediterranean but which nonetheless deserve in my view to be mentioned. The first is the use of domestic water for fertilization of the basins; you know that in various cases both for herbivorous fish such as mullet and for plankton cultures used, for instance, for young shrimp larvae or again for bivalves, fairly frequent attempts have been made, especially in the Far East, to mix domestic waste with sea or brackish water in a proportion of 10 to 20 percent of residual water to 80 to 90 percent sea water. This is an interesting method because, for no very clear reason, this organic fertilizer produces much better results than mineral fertilizers, which have nearly always produced, if not disastrous, at least poor results whenever they have been used. I think, however, that in our advanced countries the use of domestic waste for fertilization should, once again, take place with great prudence. In the developing countries, domestic effluents are, in fact, simply fresh water enriched with organic matter. Unfortunately, in our civilization domestic effluents virtually always contain many chemical products, biocides and detergents but sometimes, if there are small local industries, heavy metals, oil, etc. as well. In other words, great care must be taken with domestic effluents on the Mediterranean coast because they are liable to cause chemical pollution in aquaculture installations together with organic fertilization.

A second, also very general point which I should like to mention is the use of water which has been heated by industrial plants. Here the United States and the United Kingdom are ahead; it is fairly common practice in both of these countries to use effluents from steam-generating and nuclear-power stations for experiments or even for fish farms. Unfortunately, it seems that this is not generally the case in the Mediterranean countries, which I consider a great pity. I myself, in fact, have failed to obtain this cooperation with industrial circles, although I had been consulted by the firm constructing the factory on

the prevention of fouling in seawater circulation plants. This cooperation is, in fact, very difficult to obtain, but I believe the effort should be made. The difficulty lies in the fact that the engineer or engineering firm designing a factory which has to pump in seawater and then pump it out heated, is usually concerned mainly to get rid of this hot water as quickly and as far away as possible. Unfortunately, the needs of the aquaculturist are diametrically opposed to this. The latter wants a supply of hot water at a sufficiently slow rate covering large areas so that it can be diluted. I consider that whenever biologists or oceanographers engaged in aquaculture projects get to know of an industrial project, they should try to contact those responsible for it to obtain a grant of land or some alteration in the installations so that this heated water can be reused. This is very important because despite everything the Mediterranean is not a tropical sea whatever people in the north of Europe may think; there are still seasons on the edges of the Mediterranean and, hence, the growth of species is slowed during the period of the year when temperature is lowest. Of course, the use of an industrial effluent must be accompanied by a check on its quality. One cannot use just any type of water; in particular, water which has circulated in an oil refinery or a petrochemical factory must generally be avoided because it always contains traces of oil even if great care has been taken to remove them. On the other hand, the water of steam-generating stations is good, providing it contains no chlorine, for it should not be forgotten that chlorination is carried out in most cases in order to protect installations against fouling, unless a system of cathodic protection is incorporated. Such systems, which are by no means widespread, are basically dangerous to aquaculture owing to the heavy metallic ions which they produce. Where protection is by chlorination it is obviously necessary that the water to be used by the aquaculturist should not contain a large quantity of residual chlorine; this is very easy to avoid and it is in the interest of the industrialist himself since in this way he can economize on chlorine; all that has to be done is to place analysers along the water circuit so as to be sure that the effluent contains no residual chlorine.

Having concluded these few general considerations, I wish to say that I am deeply convinced that Mediterranean aquaculture has not only a future but a great future. A future which is all the brighter because the natural resources of our sea are generally poor and because the climate, which despite everything is quite warm, is therefore conducive to the rapid growth of the species cultured. There will doubtless be difficulties; for some species it will probably be necessary to make an effort at marketing level in order to get the consumers of certain countries to purchase species which they do not appreciate. After all, with the expansion of the consumption of frozen fish, Europeans have been persuaded to eat all sorts of fish, particularly of the Gadidae family, which they did not eat 10 or 15 years ago. So, even if in some cases the species that can be cultivated easily are not usually consumed, I see no reason why the public should not gradually be persuaded to eat them. I repeat for the last time - I think and sincerely believe that Mediterranean aquaculture has a future and I am convinced that FAO was quite right to organize this meeting as it has organized previous ones. If the efforts currently being made in the various countries are crowned with success, these countries and the whole Mediterranean will owe it gratitude.

ANNEX VII

REPORT OF THE FOURTH SESSION OF THE WORKING PARTY ON RESOURCES APPRAISAL AND EXPLOITATION[1/]

Athens, 9-10 March 1972

1. The Working Party on Resources Appraisal and Exploitation met under the chairmanship of Mr. C. Bas.

2. The review of the findings achieved by the group on the state of exploitation of demersal stocks in the western Mediterranean and the subsequent discussion illustrated the urgent need for applying management measures in this area. If appropriate measures were not applied soon, the depletion of stocks already overfished could only worsen with the effect of further reducing the profitability of their exploitation. It was also stressed that even in areas where the situation is not already alarming, it would be wise to give immediate consideration to the establishment of a framework for a management scheme since the problems of implementing such a scheme will become more serious when the optimum level of exploitation has been exceeded.

3. Possible regulatory measures, as well as their effects on economy and employment have been discussed at some length. Following these discussions, the Working Party has adopted the following resolution:

RESOLUTION XI/72/2

The Council,

Noting that assessments implemented by the GFCM Working Party on Resources Appraisal and Exploitation clearly show that, as a result of the continuous increase in fishing effort, several stocks in the western Mediterranean, and particularly those located off European coasts, are at present overfished,

Recommends that

i) a meeting of senior fishery officers of the countries of the western Mediterranean area be organized in order to define, on a regional basis, appropriate procedures and measures to ensure the protection of resources and to improve the profitability of their exploitation;

ii) countries bordering the western Mediterranean and which do not already apply such measures prohibit trawl mesh size less than 40 mm (stretched) as well as any special device hampering the full opening of meshes;

iii) these measures be enforced in all countries fishing in the western Mediterranean;

iv) the rate of exploitation be adjusted to the potential of resources exploited by individual countries, this implying a reduction of fishing effort in the case of resources where maximum catch has already been exceeded.

1/ Previously Working Party on Demersal Resources Appraisal and Exploitation

4. Several statements were then made to the Working Party regarding the state of fishery resources and their exploitation:

Mr. D. Levi (Italy) presented a paper entitled "On the Suitability of Fuel Consumption as a Possible Index of Fishing Effort for some Mediterranean Trawl Fisheries". Fuel consumption, being a function of power and running time of the engine , this variable could provide a good estimate of the trawler fishing effort, more reliable than that at present available to the group, e.g. number of boats, total tonnage or power of the fleet. Since fuel for fishing boats is exempt from duty, its consumption is accurately recorded in customs documents. These might therefore be a source of data of basic interest, particularly historical, even though problems still remain such as the lack of precision in the location of fishing areas and in apportionment of fishing effort devoted to various types of fishing. These problems had already been encountered by the Working Party when processing the other indexes of fishing effort. An example was given of the use of the fuel consumption index for analysing the stocks of the central Adriatic.

Mr. S. Jukic (Yugoslavia) informed the group of an assessment on the state of the stocks of Norway lobster in the Adriatic. Yields and landings during the past ten years, abundance on the various grounds and experiments on selectivity for this species were described.

Miss T. Vucetic (Yugoslavia) presented the work "Seasonal and Annual Fluctuations of Zooplankton and Echotraces Density on the Fishing Grounds of the Central Adriatic" she is carrying out with Mr. I. Kacic. This work shows that the abundance of zooplankton, fish larvae, echotraces and yields of the Yugoslav pelagic fishery present parallelisms in their seasonal and annual variations. The interest of echo-acoustic surveys in studying the distribution and abundance of pelagic resources was discussed in this occasion. Such surveys are also carried out in Israel and, in the framework of UNDP/FAO projects, in Algeria, Tunisia and Turkey. The group was of the opinion that a comparison on a regional basis of the results obtained would be very useful.

Mr. M. Bilio (Italy) reported experiments he carried out with Italian-type trawls. The experiments showed that the horizontal opening of the net can vary to a great extent and that it is negatively correlated to the spread of the otter boards, and not positively as it is commonly assumed. He advanced the hypothesis that this peculiarity might be due to the great length of the bridles and to the fact that they are composed of very heavy mud ropes and lighter sweep lines.

Mr. J. Eckenazi (Bulgaria) and Mr. K.I. Ananiadis (Greece) gave a short description of the present state of fishery research in their respective countries.

APPENDIX I

AGENDA

1. Steps to be taken to promote the application of management measures

2. Improvement of stock assessment

   2.1 Estimates of fishing effort and processing of data on catch and catch per unit effort

   2.2 Biological sampling

3. Future activities

   3.1 Pelagic resources

   3.2 Resources of the Eastern Mediterranean and the Black Sea

4. Review of recent relevant documents

5. Other matters

ANNEX VIII

REPORT OF THE THIRD SESSION OF THE WORKING PARTY ON FISHERY STATISTICS[1/]

Athens, 8 March 1972

1. The state of progress of the survey undertaken to test the feasibility of the regional standardized system for reporting annual catch by species group by sub-area and the enquiry on fishing fleets (size and structure) was reviewed. Several specific questions concerning the progress of the compilation, on a regional basis, of catch and fishing fleet statistics were discussed by the Secretariat with the representatives of Algeria, Bulgaria, France, Italy, Tunisia and Yugoslavia.

2. Some delegates stressed the lack of qualified personnel in certain countries and the urgent need for the further training of officers in charge of collecting and processing statistics, because although in some cases series of very complete data had been compiled, proper analysis could not be undertaken. Countries already assisted by UNDP/FAO projects could request consultant services through these projects. Further it was recalled that this necessity in connexion with the related subject of stock evaluation had been pointed out at the Tenth Session of the GFCM; the Secretariat stated that there was some hope that a training centre for this purpose could be organized.

3. However, the Working Party felt it was essential that the national officers responsible for fishery statistics should be given a basic training in methods of data analysis for other purposes such as economic studies: the Working Party therefore recommended that special courses of a limited duration, organized independently for fishery statisticians and administrators on the one hand, and for fishery biologists on the other, should be provided for the training of personnel in the techniques of handling fishery statistical data. It was also recommended that junior staff should receive, locally, practical training in statistical methods.

4. Several participants congratulated the authors of the FAO/GFCM Species Identification Sheets for the excellent work accomplished and expressed the wish that the utilization of these sheets would spread rapidly. The Working Party recommended that FAO send copies of the sheets for comments, corrections and possible additions to a certain number of biologists and statisticians, experts in the ichthyological fauna of the Mediterranean and fish marketing. In view of the high practical value of these sheets and the emphasis placed by the Council on the need to promote their use in each member country, the participants considered their possible translation, at the cost of interested countries, into languages other than those officially used by FAO (English, French and Spanish). Possible assistance from FAO, e.g. by providing the drawings, was discussed. The meeting was informed that the Secretariat would take up this matter with the FAO Publications Division and inform interested countries of arrangements which could be made.

1/ Previously Working Party on Fishery Statistics and Biological Sampling

APPENDIX I

AGENDA

1. Review of replies to the questionnaires sent by the Secretariat

2. Utilization of Species Identification Sheets

3. Other matters

ANNEX IX

REPORT OF THE FOURTH SESSION OF THE WORKING PARTY ON AQUACULTURE AND FISHERIES IN BRACKISH WATERS

Athens, 8 March 1972

1. The Working Party on Aquaculture and Fisheries in Brackish Waters met under the chairmanship of Mr. H. Ben Alaya. The meeting devoted its attention mainly to the implementation of the resolutions of the GFCM Symposium on Brackwishwater Aquaculture convened prior to the Council's current session.

2. It was agreed that the resolutions directed to the member governments relating to planning of aquaculture (Resolution 1), prevention of aquatic pollution (Resolution 2), introduction of exotic species (Resolution 4) and the facilitation of attendance by research workers in annual meetings of COPRAQ institutions (Resolution 8) should be forwarded to them by the Secretariat for necessary action and their implementation should be followed up.

3. The Secretariat was requested to prepare and circulate a questionnaire for the compilation and/or up-dating of an inventory of brackishwater areas suggested in Resolution 1.

4. The research on the effects of pollution on aquaculture proposed in Resolution 2, on fish and shellfish diseases in Resolution 5, and on artificial feeds in Resolution 6, should be included in COPRAQ.

5. The COPRAQ should be continued and annual meetings of the research workers organized as suggested in Resolution 8.

6. The Working Party was of the view that in the proposed investigations relating to fish and shellfish diseases, attention should also be devoted to parasitology and when new introductions are made, it should be ensured that the animal concerned is both free of diseases and of harmful parasites.

7. To facilitate action for the control of the effects of pollution on aquaculture, it was agreed that the Secretariat should send to member governments a list of pollutants that have been established to be harmful.

8. The meeting drew special attention to phenomena that affect aquaculture, like the red tides caused by eutrophication or other factors, and emphasized the need to take appropriate action for their control.

9. The meeting considered in detail the question of controlling the introduction of exotic species by governments and concluded that a registry of introductions and transplantations should be established. It was suggested that the Council should urge FAO to explore the possibilities of undertaking this work.

10. For the implementation of Resolution 3, relating to improvement of natural stocks, the Working Party agreed that the Secretariat should transmit it to member governments urging that such experiments, when undertaken, should be on a sufficiently large scale and for a sufficiently long period of time to obtain conclusive results.

11. The Working Party reiterated the need for training of personnel, both through the organization of short-term training courses as well as the award of fellowships. FAO was urged to make all possible efforts to obtain necessary funds for holding the proposed training centre on brackishwater aquaculture in implementation of Resolution 7. In the event of these efforts not being successful, the member governments may be approached for contributions to hold such a training centre under the auspices of GFCM.

APPENDIX I

AGENDA

1. Implementation of the resolutions adopted by the GFCM Symposium on Brackishwater Aquaculture
2. FAO/GFCM Cooperative Programme of Research on Aquaculture
3. Inventory of brackishwater areas for aquaculture
4. Registry of introductions and transplantations
5. Other matters

ANNEX X

REPORT OF THE FIRST SESSION OF THE WORKING PARTY ON ECONOMIC PROBLEMS OF FISHERIES DEVELOPMENT

1. The Convener, Mr.C.Laskaridis, explained that the objective of the meeting was to sound out further views on the topics proposed for discussion at the Symposium on Economic Problems of Fisheries Development in the Mediterranean area, and to outline the way in which it was intended to proceed with the preparations. It was explained that many of the papers would describe specific country situations and that the Secretariat would rely heavily on contributions from member countries.

2. The Secretariat amplified on a number of points which had not been fully covered in the discussion in plenary. In particular the attention of the Working Party was drawn to a proposal to examine the protection given to national fishing industries. It was generally felt that not much support or fiscal protection was afforded to fishing industries in the region, but the subject would nevertheless be worth studying and might be a means of getting governments to give greater encouragement to the rational development of national fishing industries. Several delegates commented on the impact that development of the fishing industry had on other sectors of the economy and referred to the important linkage effects of the industry both backward into shipbuilding and forward into the fish processing industry.

3. A number of delegates gave further encouragement to the proposal to study the economics of marketing. The industry in most Mediterranean countries has not yet solved the problems posed by seasonal fluctuations in landings,and in Italy, for example, due to deficiencies in the internal marketing structure, it appeared that fish which could, with equal or greater advantage, be sold on the domestic market, was presently exported.

4. A proposal was made that the Symposium might usefully consider the question of the terms of employment of fishermen and the system of remuneration. Since earnings were directly linked to catch, this gave a positive incentive to overexploitation. It was, however, pointed out that the system was the same in almost all countries and that the Mediterranean posed few special problems in this respect.

5. The view was expressed that the proposals as they now stood were of a rather general nature and it was hoped that the themes of the Symposium would be more precisely defined. In conclusion the Secretariat explained that it intended to prepare examples of the type of papers it was envisaged would be presented to the Symposium and these would be distributed to countries as soon as possible.

6. In order to facilitate the preparatory work, it was decided to request Member Nations to nominate liaison officers in each country through whom contact could be made with contributors to the Symposium.

7. As the Symposium will also rely on results obtained by the Working Party on Utilization and Marketing of Fish and Fishery Products, it was proposed to incorporate, for the time being, the latter into the Working Party on Economic Problems of Fisheries Development.

8. Following on the work on utilization and marketing of fish, the Working Party on Economic Problems of Fisheries Development considered the Imported Products Identification Sheet prepared by the Secretariat for the assembly of data for a study on the trade in fishery products between GFCM member countries. The Sheet was approved and the participants of the session were requested to indicate potential sources of information on imported fishery products in their respective countries.

9. Four papers on problems in fish technology were presented to the Working Party for consideration.

(i) Laboratory tests carried out in Spain with regard to fish preservation by means of refrigerated seawater have shown excellent results. It was discovered that the optimum use of this method was reached if storing fish for 24-72 hours. Initial trial application of the method on board vessels is foreseen for the near future. The Working Party suggested that the research programme should also consider problems connected with the transfer of the fish from one vessel to another and the offloading of the fish in the port, since these aspects had been found the main limitation of the method in Yugoslavia.

(ii) A brief explanation of a continuous freezer for sardines was given. The device had been developed in a factory on the Mediterranean coast of France and the Working Party showed considerable interest in it, because it was felt that the system used could be very suitable for the freezing of pelagic fish elsewhere in the Mediterranean.

(iii) Further information on the keeping quality of defrosted fish as compared to fresh fish was provided.

(iv) The Working Party was informed about recent developments in France as regards the introduction of new fish products. These products are destined for the convenience sector of the market and sold to consumers mainly through supermarkets. They also include the presentation in a well accepted form of species which do not enjoy a high consumer preference in the fresh fish market.

10. It was intended to hold, if necessary, and if funds are available, an intersessional meeting of the Working Party on Economic Problems of Fisheries Development.

APPENDIX I

AGENDA

1. Proposed topics for the Symposium

   1.1 Resources management

   1.2 National plans and policies

   1.3 Perspective study of Mediterranean fishery development

   1.4 The economics of marketing

   1.5 More rational utilization of Mediterranean under-utilized fish resources

   1.6 Other possible topics

2. Preliminary preparation and procedures

3. Problems of fish technology

4. Other aspects of trade fishery products between GFCM member countries

5. Other matters

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